

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

**ORDER No. 00-021**

**UPDATED SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NO.  
93-079**

**TOSCO REFINING COMPANY AND TOSCO CORPORATION, PHILLIPS  
PETROLEUM COMPANY, AND TEXACO REFINING AND MARKETING, INC.  
SAN FRANCISCO AREA REFINERY AT AVON  
CONTRA COSTA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

**SITE LOCATION**

1. The 2,100-acre facility is about 3 miles east of the City of Martinez on the southern shore of Suisun Bay in Contra Costa County. The facility is bounded on the west by Pacheco Creek and Walnut Creek, on the north by wetlands and Suisun Bay, on the south by Highway 4, and on the east by Memory Gardens cemetery, Mallard Reservoir, Hastings Slough and wetlands. The facility also includes an approximately 100-acre loading/unloading terminal known as the Amcorco Terminal, which is located about 2-miles west of the refinery (Figure 1).

**SITE HISTORY**

2. Tosco Refining Company, a division of Tosco Corporation, (hereinafter called Tosco) owns and operates the Avon Refinery (hereinafter called the facility) with an approximate daily throughput capacity of 145,000 barrels of petroleum crude oil and produces primarily gasoline and diesel fuels. Other products are liquid petroleum gas, heating oil, jet fuel, and petroleum coke. The facility has been operating since 1913, and has been owned by Tosco since 1976.

**NAMED DISCHARGERS**

3. Tosco as the current property owner is named as a discharger. Phillips Petroleum (hereinafter called the Phillips), Texaco Refining and Marketing, Inc., (hereinafter called the Texaco) as successor in interest to Tidewater Oil Company, and Associated Oil Companies were the previous owners and operators of the facility. Phillips and Texaco have contributed to some of the contamination that remains at the facility, and therefore are named as dischargers. Tosco, Phillips, and Texaco are hereinafter collectively referred to as the Dischargers.

Tosco, Phillips, and Texaco formed a confidential Joint Investigation and Remediation Agreement in July 1993, which covers the facility area and the majority of concerns addressed in this Order. Tosco has agreed to provide

reasonable facility access to Texaco, and Phillips in order to perform and complete their responsibilities. Additionally, Tosco has agreed to work with Phillips and Texaco in cleaning up the facility. Tasks required to be completed exclusively by Tosco are defined within this Order.

#### **REGULATORY STATUS**

The site is subject to the following Board orders:

4. On July 21, 1993, the Board adopted Site Cleanup Requirements (SCR) Order No. 93-079 related to specified FPLH recovery activities. Order No. 93-079 names Tosco, Phillips Petroleum Company, and Tidewater Oil Company as Dischargers and rescinds Order No. 90-088.
5. The Board also adopted Waste Discharge Requirements Order No. 88-053, National Pollutant Discharge Permit No. CA0004961 as amended on December 12, 1990, to regulate the discharge of treated wastewater to Suisun Bay.
6. On October 20, 1999, the Board adopted Waste Discharge Requirements Order No. 99-083. Order No. 99-083 names Tosco, Phillips Petroleum Company, and Texaco Refining and Marketing Inc. as Dischargers and rescinds Order No. 92-078. Order No. 99-083 requires the installation of petroleum tank leak detection systems, the remediation of various petroleum impacted groundwater sites located at the refinery, and modifies the Self Monitoring Program for the site.

#### **PURPOSE OF ORDER**

7. The purpose of this order is to define the requirements for cleanup of the site's groundwater. Additionally, the order defines requirements for groundwater monitoring and investigations, and defines specific tasks to bring the facility into compliance with the Aboveground Petroleum Storage Act.

#### **GEOLOGIC SETTING OF THE SITE**

8. The Concord fault is an active fault that runs through the western side of the facility. Special studies along the Concord fault delineated a zone of concern that encompasses the western portion of the facility.
9. A portion of the facility was built on marshlands or wetlands. Fill is the first subsurface material encountered in much of the flat portions of the facility. The second subsurface material generally encountered is Bay Mud. Interbedded with the Bay Mud are the Bay Peat, and sandy units. The Bay Peat is composed primarily of black or brown organic matter derived from vegetation deposited in marshes. The Bay Mud ranges in thickness from zero to forty feet throughout the region.
10. Groundwater in parts of the facility is a potential drinking water source, however the shallow groundwater within the major northern portion of the facility closer to the Bay exceeds 3,000 mg/l total dissolved solids, and thus does not meet the

State Board definition of a potential drinking water source. Groundwater and surface water from the facility flows toward nearby wetlands and Suisun Bay. There are four offsite drinking water wells located in the southern portion of the facility approximately 3,000 feet from Mallard Reservoir.

#### **ADJACENT SITES**

11. The site borders several other facilities. To the south lies the Concord Naval Weapons Station, and the Santa Fe Pacific Pipeline Petroleum Terminal. To the west lies the IT Vine Facility, and Acme landfill. Additionally, the site contains under separate orders the Chevron Avon Fuel Terminal, and the Monsanto Facility.

#### **REMEDIAL INVESTIGATION**

12. Numerous investigations conducted at the Facility find that Facility soil and groundwater has been adversely impacted by discharges. The Facility contains several large separate phase petroleum hydrocarbon plumes and metal contaminated soil and groundwater areas. Contaminated soil and groundwater areas were generally caused by leakage from solid waste disposal sites, spills, petroleum piping and tank leaks, and other discharges to land during the facility's operation.

#### **REMEDIAL/CLEANUP MEASURES-General Requirements for the Groundwater Protection Program**

13. To effectively monitor releases to groundwater that has been impacted by numerous pollutant sources, general groundwater corrective action implementation requirements for the facility are defined as follows:
  - a. The Dischargers will monitor each waste management unit's downgradient perimeter for increasing concentration trends of the unit's Constituents of Concern. The Executive Officer may require the implementation of corrective action on any unit where monitoring data indicates an increasing threat of pollution. If the unit is determined by the Board's Executive Officer to be a significant pollution source, corrective action systems at the unit will be required to be installed and operated.
  - b. Perimeter Monitoring:  
The Facility's perimeter has been divided into 16 perimeter segments (Figure 2). The area monitored by each perimeter segment may contain waste disposal units, spill areas, or other contaminated areas. Each perimeter segment contains constituents of concern and hydrogeologic parameters that are unique to the particular perimeter segment and area tributary to each perimeter segment. The Dischargers will monitor the perimeter of the Facility for Constituents of Concern, which are derived from each unit and within each perimeter segment tributary area. If established Trigger Levels (Table 4) are exceeded at the perimeter, resampling and analysis will be performed. If resampling and analysis

validates an exceedance of a Trigger Level, corrective action at the perimeter may be required. The final determination of the need for corrective action will be made by the Board's Executive Officer.

c. Free Product Recovery:

The Dischargers have removed over 3.2 million gallons of free phase liquid hydrocarbon (FPLH) from the petroleum hydrocarbon pools beneath Tracts 1, 2, and 3. The Dischargers will continue to reduce the mass of free phase petroleum hydrocarbon source areas at the facility where hydrocarbons may be present in recoverable quantities.

Currently, three types of systems are used for free product removal: active skimming systems, passive recovery systems (in situ canisters), and periodic free product recovery by vacuum truck. Board Staff noted in 1999 that several wells within the refinery contain product thickness greater than 0.1-foot but are not part of the current FPLH recovery program.

d. The Dischargers will prevent discharges to soil or groundwater from aboveground petroleum storage tanks by complying with State and Federal aboveground petroleum tank laws.

#### **ABOVEGROUND PETROLEUM STORAGE TANKS**

14. Tosco operates approximately 108 aboveground petroleum storage tanks at the facility. Additionally, several active petroleum tanks that are associated with the refinery's Amorco Terminal are located near the south end of the Benicia-Martinez Bridge but are not currently included in any refinery tank monitoring or upgrade program. Aboveground petroleum storage tanks are required to comply with the requirements of Chapter 6.67 Section 25270 of the Health and Safety Code, and with Part 112, Title 40 of the Federal Code of Regulations. In part, the regulations require Tosco to install and utilize a leak detection system for each regulated tank. Tosco has proposed to monitor 75 aboveground tanks quarterly for leakage with 35 groundwater monitoring wells, 29 tanks are equipped with double bottoms, and three tanks are monitored for leaks using Tracer Technology.
15. Staff has reviewed the leak detection monitoring systems for the Facility's petroleum tanks. The Board finds that a majority of the 35 groundwater wells that monitor 75 tanks are not capable of detecting early releases from the tanks.
16. Aboveground petroleum storage tank facilities are required to have secondary spill containment for capture of sudden releases from an aboveground petroleum tank. The facility utilizes several different types of soil berms, spill collection ponds and channels located in the vicinity of an aboveground petroleum tank for containment of petroleum hydrocarbon releases. Some of the spill collection areas are located far from the tank area where the spill may occur, and because of this a large surface area may be impacted by a petroleum spill.

## **RISK ASSESSMENT**

17. The dischargers have prepared a 1999 submittal entitled Human Health and Ecological Risk Assessment (HHERA). This order was developed with consideration of the findings stated in the HHERA. Remedial actions implemented through this order may be re-evaluated in the future provided the outcome of ongoing investigations and further risk assessment work for the site warrants further or revised remedial action.

## **BASIS FOR CLEANUP STANDARDS**

18.
  - a. **General:** State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. The cleanup plan confirms the Board's initial conclusion that background levels of water quality cannot be restored at the facility. This conclusion is based on review of the widespread contamination at the site and the excessive costs that would be associated with a cleanup to background levels. This order and its requirements are consistent with Resolution No. 68-16.

State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

- b. **Beneficial Uses:** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in Title 23, California Code of Regulations, Section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high

contaminant levels. Groundwater underlying and adjacent to the site qualifies as a potential source of drinking water.

19. The existing and potential beneficial uses of the ground water in the area are:
  - a. Drinking water;
  - b. Municipal Supply;
  - c. Industrial Process and Service Supply; and,
  - d. Agricultural Supply.
20. The existing and potential beneficial uses of the Suisun Bay are:
  - a. Industrial Process and Service Supply;
  - b. Navigation;
  - c. Water Contact Recreation;
  - d. Non-Contact Recreation;
  - e. Ocean Commercial and Sport Fishing;
  - f. Wildlife Habitat;
  - g. Preservation of Rare and Endangered Species;
  - h. Fish Migration and Spawning; and,
  - i. Estuary Habitat.

#### **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

21. This action is exempt from the provisions of the California Environmental Quality Act pursuant to Section 15321, Title 14 of the California Code of Regulations.

#### **NOTIFICATIONS AND MEETING**

22. The Board notified the Dischargers and interested agencies and persons of its intent to prescribe waste discharge requirements for discharges from the site and has provided them with an opportunity for a public meeting and an opportunity to submit their written views and recommendations.
23. The Board in a public meeting heard and considered all comments pertaining to the discharge.

#### **BASIS FOR 13304 ORDER**

24. The Dischargers have caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

#### **COST RECOVERY**

25. **Aboveground Tanks** - The Board's staff has notified Tosco that pursuant to Section 25270.0 and 25270.11 of Chapter 6.67, Division 20 of California's Health and Safety Code Tosco shall be liable to the extent of the reasonable cost actually incurred in overseeing or contracting for cleanup or abatement efforts. Tosco has agreed to reimburse the State according to Section 25270.9 and 25270.11.

26. **Section 13304** – Pursuant to California Water Code Section 13304, the Dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order. The Dischargers have agreed to reimburse the State according to Section 13304.

**IT IS HEREBY ORDERED**, pursuant to Section 13304 of the California Water Code, that the Dischargers, their agents, successors and assigns shall cleanup and abate the effects described in the above findings as follows:

**A. PROHIBITIONS**

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with subsurface investigations and cleanup that will cause significant adverse migration of pollutants are prohibited

**B. TASKS**

1. The Dischargers shall comply with all Prohibitions, Specifications, Tasks, and Provisions of this Order, immediately upon adoption of this Order or as provided below. All report submittals must be acceptable to the Executive Officer.
2. **Additional Perimeter Investigations**  
For each Perimeter Segment (Figure 2) subject to this Order, Trigger Levels shall be established for the associated constituents of concern (COCs). Trigger Levels, updated COCs, and methods for validating data and statistically evaluating whether a Trigger Level exceedance is significant shall be proposed by the Dischargers for approval by the Executive Officer.

The Dischargers shall meet the requirements of this provision according to the following schedule.

- a. The Dischargers shall prepare a list acceptable to the Executive Officer that identifies updated COCs, for each perimeter segment (Segments 1-16)

**PROPOSED COCs DUE: April 20, 2000**

- b. The Dischargers shall submit for approval by the Executive Officer, Trigger Levels for each Perimeter Segment Area COCs (Segments 1-16). Approved Trigger Levels shall be attached to the SM&RP and identified as Table 4. The Dischargers shall also propose methods for validating data and statistically evaluating whether an exceedance of a Trigger Level concentration in a perimeter groundwater monitoring well is significant.

**REPORT DUE: April 20, 2000**

3. **Remedial Action Status and Performance Report**

The Dischargers shall include in the annual report a **Groundwater and FPLH Collection and Control System Performance Evaluation Report**. This report shall include future groundwater extraction or FPLH recovery or treatment systems. The report shall include the following components and be acceptable to the Executive Officer:

- a. For all recovery systems installed after adoption of this Order, include as-built construction designs or shop drawings for each recovery system, which includes detailed cross sectional drawings or well logs, as appropriate.
- b. An extraction/treatment system operation plan, maintenance plan, and maintenance schedule for each recovery system.
- c. System Performance: The Dischargers shall periodically demonstrate that all groundwater quality control and extraction/treatment systems are effectively controlling groundwater quality at the Perimeter Segements. The system performance evaluation shall include an establishment of flow capture zones by modeling, or field measurements, pump performance, and presentation of chemical monitoring data, to demonstrate containment, capture, and removal of pollutants. The report shall also detail extraction system influences to groundwater or surface water levels in adjacent marsh/wetlands.

**REPORT DUE: December 30, 2000**

**PERIODIC SYSTEM PERFORMANCE REPORT DUE: thereafter, every year by December 30<sup>th</sup>.**



4. **Aboveground Petroleum Storage Tanks**

a.) Leak Detection: Tosco shall submit a leak detection plan and schedule acceptable to the Executive Officer for each regulated aboveground petroleum tanks which are not equipped with leak detection systems or utilize groundwater wells for petroleum tank leak detection systems. All regulated tanks must be fully upgraded with approved leak detection systems by November 2020. A summary of upgraded tanks shall be reported to the Board annually

**PLAN AND SCHEDULE DUE: June 30, 2000**

**FIRST ANNUAL SUBMITTAL DUE: December 30, 2000**

**Thereafter every December 30th.**

b.) Tank Bottom Testing: All regulated tanks shall have their bottoms tested (using API Standard 653 or the most current regulatory approved standard) for integrity and thickness. The inspection time interval shall be no more than 20 years and the interval will be dependent on the likelihood of tank bottom corrosion and the age of the tank. A report acceptable to the Executive Officer shall be submitted that identifies all regulated aboveground petroleum storage tanks at the facility. The report shall also include: tank age, tank contents, type of tank bottom, date of last internal integrity and thickness test, tanks which have not had internal integrity and thickness tests within the last 20 years, and a schedule for tank integrity and thickness testing for all regulated tanks. A summary of inspection results shall be reported to the Board annually.

**REPORT DUE: June 30, 2000**

**ANNUAL SUBMITTAL DUE: December 30<sup>th</sup>**

c.) Secondary Containment: Tosco shall submit a technical report acceptable to the Executive Officer, which includes a detailed map identifying all tanks regulated under Chapter 6.67, Section 25270 of the Health and Safety Code, and Part 112 of the Federal Code Of Regulations. Secondary containment features for all regulated storage tanks shall be identified on the map. Arrows identifying the direction of petroleum flow from a regulated tank to the containment area shall be drawn on the map unless the secondary containment consists of berms that immediately surround the tank.

Tosco shall identify in the report tanks where sudden petroleum releases may impact large areas (soil and/or surface water) within the refinery, or along the perimeter of the refinery. Tosco shall document in the report any deficiencies in the regulated tank's secondary containment features and include recommendations for improving secondary aboveground tank containment features.

**REPORT DUE: August 30, 2000**

d.) Amorco Terminal (Martinez Bridge area) Tanks: Tosco shall comply with Task 4a, 4b, and 4c above for all active Amorco Terminal aboveground petroleum storage tanks. Additionally, Tosco shall prepare a technical submittal acceptable to the Executive Officer that includes the following:

- Identification of past releases and a summary of soil and groundwater investigations within the Amorco tank area.
- Based on petroleum hydrocarbon impacts to soil or groundwater within the vicinity of tank area Tosco shall evaluate the need for additional investigations and/or corrective action within the tank area.

**SUBMITTAL DUE: October 30, 2000**

5. **Additional Investigation and Cleanup Plan for Free Phase Liquid Hydrocarbons**

a.) The Dischargers shall submit a report and map acceptable to the Executive Officer that identifies all wells within the Facility that contain free phase liquid hydrocarbons (FPLH). The report and map shall identify the following: location of wells where FPLH is recovered and a description of the type of FPLH recovery method, recent FPLH thickness, and frequency of FPLH recovery. The report shall identify wells that contain FPLH with apparent FPLH, but that are not part of an FPLH recovery program.

**REPORT AND MAP DUE: April 30, 2000**

b.) The Dischargers shall submit a plan and schedule acceptable to the Executive Officer for a FPLH recovery program for all wells that contain FPLH. A table shall be included in the plan and shall summarize all wells where FPLH is present, and the FPLH recovery method. Table 3 will be attached to the SM&RP and updated annually by the Dischargers. A detailed performance summary of the FPLH recovery program shall be reported to the Board annually and shall include: tabulated recovery volume data, graphical representations of monthly production and cumulative production data for each active FPLH recovery well, description of operation limitations and corrective actions or repairs made, and plans for modification of the system over the following year.

**PLAN AND SCHEDULE DUE: July 30, 2000**

**ANNUAL SUMMARY DUE: December 30<sup>th</sup>**

c.) Wells containing FPLH shall not be sampled for groundwater analyses. A map showing the location of these wells shall be combined with the well location map, which must accompany the monitoring reports.

6. **Perimeter Investigations**

The Dischargers shall submit a report acceptable to the Executive Officer which evaluates the benefits of installing additional downgradient groundwater monitoring wells along the perimeter of WMU-10, and along Perimeter Segments 1, 7, 11, and 15 where current well spacing may not detect offsite releases.

**EVALUATION DUE: November 30, 2000**

7. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order.

**C. PROVISIONS**

1. The Dischargers shall cleanup pollution at the site in accordance with any approved cleanup plan required by this Order.

2. Free Phase Liquid Hydrocarbon Recovery Program

The Dischargers shall extract FPLH in accordance with Table 3 of the SMR&P, from beneath the Facility including FPLH originating from any waste management unit. Dissolved pollutants shall be removed where concentrations are determined to be a threat to the beneficial uses of State waters.

3. Aboveground Petroleum Storage Tanks

Tosco shall comply with the requirements of Chapter 6.67 Section 25270 of the Health and Safety Code, and with Part 112, Title 40 of the Federal Code of Regulations.

a.) Leak Detection Systems: All regulated tanks shall be monitored to assure that petroleum products will not discharge to surface and subsurface waters of the State. All tanks shall be fitted with leak detection bottoms, leak prevention systems, or with a tank leak detection monitoring system/method approved by the Executive Officer.

b.) Internal Tank Inspections: All regulated tanks shall have their tank bottoms tested (using API Standard 653 or the most current industry or regulatory approved standard) for integrity and thickness. The inspection time interval shall be no more than 20 years and the interval will be dependant on the likelihood of tank bottom corrosion and the age of the tank. A summary of inspection results shall be reported to the Board annually.

4. The Dischargers will monitor the perimeter of the Facility for Constituents of Concern which are derived from each unit and within each perimeter

area segment. If established Trigger Levels are exceeded at the perimeter, corrective action at the perimeter must be evaluated.

5. The Dischargers shall monitor for all Constituents of Potential Concern (COPC) **once every five years** and for each Constituent of Concern at intervals determined in the SM&RP.
6. In the event of a release of a Constituent Of Concern (COC) at a concentration greater than the Trigger Levels beyond the Perimeter Compliance Point (Perimeter Segment) the Dischargers shall evaluate the need for corrective action.
7. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).
8. **Good O&M:** The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.
9. **Cost Recovery:** The discharger shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
10. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the discharger shall permit the Board or its authorized representative:
  - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the requirements of this Order.
  - c. Inspection of any monitoring or remediation facilities installed in response to this Order.

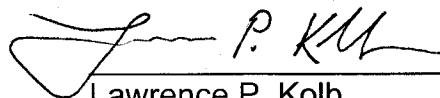
- d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.
- 11. **Self-Monitoring Program:** The discharger shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.
- 12. **Contractor / Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
- 13. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).
- 14. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:
  - a. CalEPA - Department of Toxic Substance Control
  - b. US EPA Region 9
  - c. Contra Costa County Department of Health ServicesThe Executive Officer may modify this distribution list as needed.
- 15. **Reporting of Changed Owner or Operator:** The discharger shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.
- 16. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the discharger shall report such discharge to the Regional Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

17. **Rescission of Existing Order:** This Order supercedes and rescinds Order No. 93-079
18. **Periodic SCR Review:** The Board will review this Order periodically and may revise it when necessary.

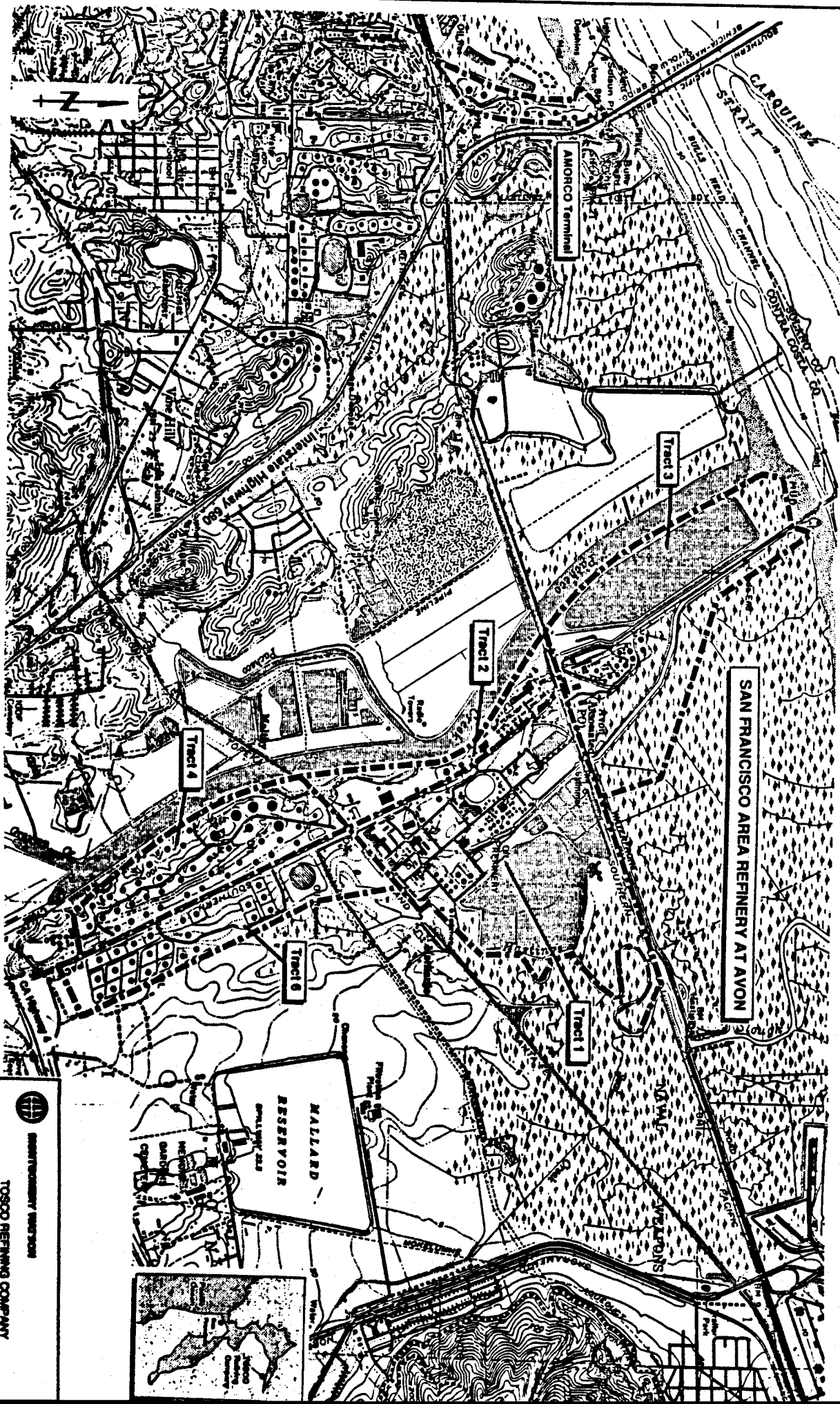
I, Lawrence P. Kolb, Acting Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 15, 2000.

  
\_\_\_\_\_  
Lawrence P. Kolb  
Acting Executive Officer

=====  
FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY  
SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO:  
IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE  
SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR  
INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY  
=====

**Attachments:**

1. Figure 1: Site Location and Tract Plan Map
2. Figure 2: Perimeter Segment Map
3. Attachment 1: Self-Monitoring and Reporting Program (SM&RP)



SCALE IN FEET

USGS Topographic Map, 7.5, The 100 ft Contour, 1960



ENVIRONMENTAL PROTECTION

TOSCO REFINING COMPANY  
SAN FRANCISCO AREA REFINERY AT AVON  
SITE LOCATION AND TRACT PLAN MAP

FIGURE 1

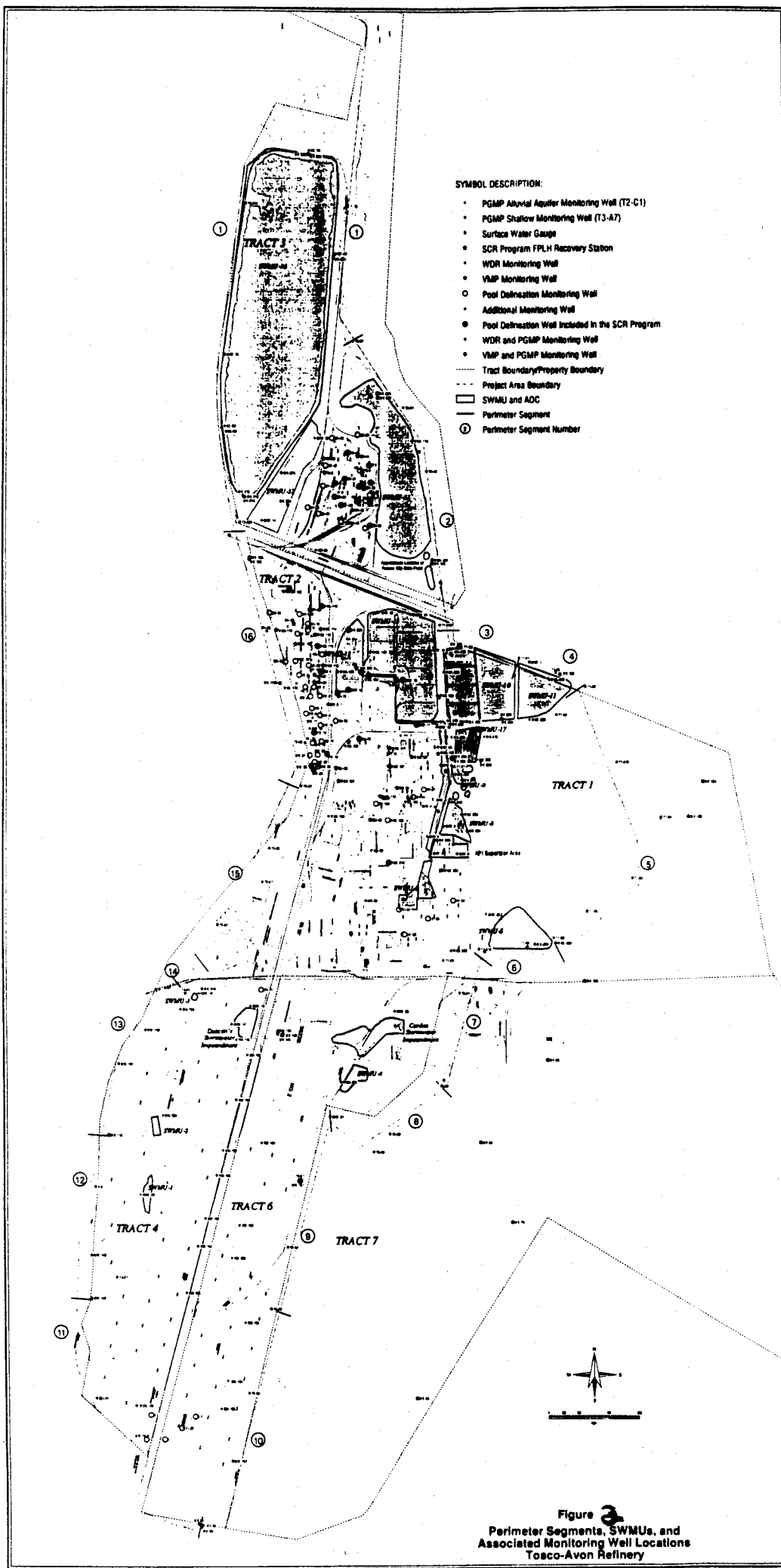


Figure 3  
Perimeter Segments, SWMUs, and  
Associated Monitoring Well Locations  
Tosco-Avon Refinery



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**

**SAN FRANCISCO BAY REGION**

**SELF MONITORING AND REPORTING PROGRAM**

**FOR**

**TOSCO REFINING COMPANY AND TOSCO CORPORATION PHILLIPS  
PETROLEUM COMPANY, AND TEXACO REFINING AND MARKETING INC.**

**SAN FRANCISCO AREA REFINERY AT AVON**

**CONTRA COSTA COUNTY**

**ORDER NO. 00-021**

**CONSIST OF**

**PART A**

**AND**

**PART B**

## **PART A**

### **A. GENERAL**

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No.73-16. This Self-Monitoring Program is issued in accordance with Section C.11 of Regional Board Order No. 00-021.

The principal purposes of a self-monitoring program by a waste discharger are:

- (1) to document compliance with waste discharge requirements and prohibitions established by the Board,
- (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge,
- (3) to develop or assist in the development of effluent standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and wastewater quality inventories,
- (4) to assist the discharger in complying with the requirements of Title 27.

### **B. SAMPLING AND ANALYTICAL METHODS**

#### Sampling

Sample collection, storage, and analyses shall be performed according to most recent version of EPA Standard Methods for the Analysis of Wastewater and in accordance with an approved sampling and analysis plan.

Water and wastewater analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytic work in his/her laboratory and he/she or their authorized representative shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

### **C. DEFINITION OF TERMS**

1. A grab sample is a discrete sample collected at any time.
2. A composite sample is a sample composed of individual grab samples mixed in proportions varying not more than plus or minus five percent from the instantaneous rate of waste flow corresponding to each grab sample collected at regular intervals not greater than one hour, or collected by the use of continuous automatic sampling devices capable of attaining the

proportional accuracy stipulated above throughout the period of discharge or 24 consecutive hours, whichever is shorter.

3. Receiving waters refers to any water which actually or potentially receives surface or groundwater which pass into, through, or under the waste management units or contaminated soils. The receiving waters are the groundwater beneath and adjacent to the waste management units, the surface runoff from the site, and the drainage ditches surrounding the site. San Francisco Bay or it's subbasins or nearby streams into which water from the unit discharges are considered receiving waters.
4. Standard observations refer to:
  - a. Receiving Waters
    - 1) Floating and suspended materials of waste origin: presence or absence, source, and distance of travel.
    - 2) Discoloration and turbidity: description of color, source, and nature of material.
    - 3) Evidence of algal or other unusual growth presence or absence.
    - 4) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
    - 5) Evidence of beneficial use: presence of water associated wildlife.
    - 6) Flow rate.
    - 7) Weather conditions: wind direction and estimated velocity, total precipitation during previous five days and day of observations.
  - b. Perimeter of the waste management unit.
    - 1) Evidence of liquid leaving or entering the waste management unit, estimated size of affected area. (Show affected area on map)
    - 2) Evidence of algal or other unusual growth, presence or absence, characterization, mineral or salt deposition.
    - 3) Evidence of erosion and/or daylighted waste material.

- c. The waste management unit.
  - 1) Evidence of algal or other unusual growth. Precipitation of sludge or minerals, quantity, nature and chemical composition.
  - 2) Evidence of erosion and/or daylighted waste material.
  - 3) Evidence of odors, presence or absence, characterization, source and distance of travel from source.

#### **D. SCHEDULE OF SAMPLING, ANALYSIS, AND OBSERVATIONS**

The Dischargers' are required to perform sampling, analysis, and observations according to the schedule specified in Part B, and the sampling and analysis plan, in the following media:

- 1. Groundwater per Title 27, Section 20415(b)
- 2. Surface water per Title 27, Section 20415(c)
- 3. Per the general requirements specified in Title 27, Section 20415(e)

#### **E. RECORDS TO BE MAINTAINED**

Written detection monitoring reports shall be maintained by the Dischargers or laboratory and shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

- 1. Identity of sample and sample station number.
- 2. Date and time of sampling.
- 3. Date and time that analyses are started and completed, and name of the personnel performing the analyses.
- 4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used. A reference to a specific section of standard EPA methods.
- 5. Calculation of results.
- 6. Results of analyses, and detection limits for each analyses.

## **F. REPORTS TO BE FILED WITH THE BOARD**

1. The **semi-annual self-monitoring reports** shall be filed on **June 30th and December 30th**. The semi-annual reports shall be comprised of at least the following:

- a. Letter of Transmittal

A letter transmitting the essential points in each report should accompany each submittal. Such a letter shall include a discussion of **any requirement violations** found during the last report period, and actions taken or planned for correcting the violations. If the Dischargers have previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the Facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

- b. Each semi-annual monitoring report shall include a compliance evaluation summary. The summary shall contain but not be limited to:

- 1) Groundwater flow and direction: A facility wide groundwater contour map based upon the past and present water level elevations and pertinent visual observations.
- 2) The method and time of water level measurement, the type of pump used for purging, pump placement in the well; method of purging, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of the pH, temperature, and conductivity testing, and method of disposing of the purge water.
- 3) A written discussion of the groundwater analyses indicating any change in the quality of the groundwater. Increasing pollutant concentration trends in any Waste Management Unit shall be noted

and flagged, and any exceedance of Trigger Levels within any perimeter segment well shall be noted and flagged.

- 4) Type of pump used, pump placement for sampling, a detailed description of the sampling procedure; number and description of equipment, field and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations.
  - 5) A description of aboveground petroleum storage tanks that have received leak detection upgrades or internal integrity inspections during the prior reporting period, and identification of aboveground petroleum storage tanks that are scheduled for leak detection upgrades or internal integrity inspections during the reporting period.
  - 6) A summary of upcoming work scheduled during a six-month period related to remediation or investigations at the site.
- c. A comprehensive discussion of the compliance record, and the corrective actions taken or planned which may be needed to bring the Dischargers into full compliance with the waste discharge requirements.
  - d. A map or aerial photograph shall accompany each report showing observation and monitoring station locations.
  - e. Laboratory analytical results must be included in each report. In accordance with the Executive Officer's November 5, 1996 letter, laboratory statements and other raw data are not required to be submitted, however; the data must be retain by the Dischargers for a minimum of six years after origination and the data must be made available for Board staff upon request. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Board.
- 1) The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods

other than EPA Methods or Standard Methods are used, the exact methodology must be submitted for review and approved by the Executive Officer prior to use.

- 2) In addition to the results of the analyses, the laboratory QA/QC information should include the method, equipment and analytical reporting limits; the recovery rates; an explanation for any recovery rate that is less than 80% or greater than 120%; the results of equipment and method blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.
  - f. An evaluation of the effectiveness of the leachate/groundwater collection, monitoring, control, and removal facilities, which includes a summary of fluid volumes removed, and a discussion of the disposal/treatment methods utilized.
  - g. A summary of the FPLH recovery program.
  - h. A summary and certification of completion of all standard observations for the waste management unit, the perimeter of the waste management unit, and the receiving waters.
  - i. Tabular and graphical summaries of the monitoring data obtained during the previous year; the report should be accompanied by a 3<sup>1</sup>/<sub>2</sub>" computer data disk, MS-DOS ASCII format, tabulating the year's data.
2. The **Annual Monitoring Report** shall be submitted to the Board covering the previous monitoring year. The Annual Self-Monitoring shall be filed by **December 30th**. The annual report can be combined with the Dischargers' summer/fall semiannual report. The report shall contain:
- a. A Graphical Presentation of selected analytical data for selected Monitoring Points, submit in graphical format the laboratory analytical data for selected samples taken. Each such graph shall plot the concentration of one or more constituents over time for a given Monitoring Point, at a scale appropriate to show trends or variations in water quality. On the basis of aberrations noted in the plotted data, the Executive Officer may direct the Dischargers to carry

out a preliminary investigation, the results of which will determine whether or not a release is indicated;

- b. A tabular summary of all the monitoring data obtained during the previous year;
- c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Dischargers into full compliance with the waste discharge requirements;
- d. A map showing the area, if any, in which fill has been completed during the previous calendar year; and
- e. A written summary of the groundwater analysis from the previous year indicating any change in the quality of the groundwater; and,
- f. An evaluation of the effectiveness of the FPLH and groundwater collection and monitoring/control facilities. The evaluation shall include a summary of the volumes of extracted FPLH and groundwater, and a discussion of the disposal methods for each.

#### **G. CONTINGENCY REPORTING**

- a. The Dischargers shall report by telephone, immediately after it is discovered, evidence of a significant release at the point of compliance or at a unit, that may pose a threat to surface or subsurface waters of the State. A written report shall be filed with the Board within seven days, containing at least the following information:
  - 1) A map showing the location(s) of discharge;
  - 2) Approximate flow rate;
  - 3) Nature of effects; i.e. all pertinent observations and analyses; and
  - 4) Corrective measures underway or proposed.
- b. Should the monitoring data indicate, for any Constituent of Concern, that the Trigger Levels at the Perimeter Compliance Point have been exceeded, the Dischargers shall notify the Regional Board verbally as to the Monitoring Point(s) and constituent(s) involved, shall provide written notification by certified mail within seven days of such determination, and shall carry out the requirements below (in part c.). In any case, the Dischargers shall inform the Regional Board of the outcome of the retest as soon after the results are available, following up with written results submitted by certified mail within seven days of completing the retest. If



resampling and analysis indicate that any COC is above the Trigger Levels and is valid and statistically significant, the Dischargers shall evaluate the need for corrective action.

**PLAN DUE DATE: Within 120 days of confirmation of exceedance of Trigger Levels.**

- c. If the Dischargers conclude that Trigger Levels have been exceeded at the Perimeter Compliance Point, then the Dischargers shall, within thirty days, sample for all Constituents of Concern at all immediately adjacent Perimeter Monitoring Points and submit them for laboratory analysis. Within seven days of receiving the laboratory analytical results, the Dischargers shall notify the Regional Board, by certified mail, of the concentration of all Constituents of Concern at each Monitoring Point.
- d. If it is determined that a waste management unit is an ongoing source of pollution which is likely to degrade State waters, the Dischargers shall immediately notify the Regional Board verbally as to the Monitoring Point(s) and constituent(s) involved, shall provide written notification by certified mail within seven days of such determination.

#### H. **WELL LOGS**

A boring log and any new monitoring well construction log shall be submitted for each sampling well established for this monitoring program, as well as a report of inspection or certification that each well has been constructed in accordance with the construction standards of the Department of Water Resources. These shall be submitted within 30 days after well installation.

## **PART B**

### **DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS**

#### **A. GROUNDWATER MONITORING**

For Each Self-Monitoring Report the Dischargers shall:

1. Collect groundwater samples at each WMU and Perimeter Segment compliance points.
2. Prepare a map showing all compliance points and WMUs.
3. Prepare a potentiometric surface map for the Facility's Water Table.
3. Groundwater wells that have floating petroleum product (FPLH) shall not be sampled or analyzed, but shall be identified and product thickness recorded.
4. Comply with the groundwater monitoring requirements in accordance with Title 27.

#### **B. GROUNDWATER MONITORING HYDROSTRATIGRAPHIC UNITS**

Groundwater samples shall be collected **semiannually (summer/fall and winter/spring)** and sampled in accordance with Table 1 and Table 2.

Groundwater analysis shall include the following field measurements: pH, temperature, specific conductance, water level, volume purged, and number of casing volumes purged.

#### **C. SURFACE WATER MONITORING STATIONS**

Surface water samples shall be collected in accordance with the facility's NPDES Permit.

#### **D. FACILITIES MONITORING - Report semiannually with monitoring report schedule identified below**

The Dischargers shall inspect all facilities to ensure proper and safe operation.

**E. MONITORING REPORT DUE DATES**

Groundwater Reports: Samples shall be collected near the middle of the sample period.

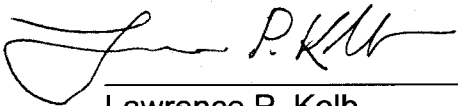
Report	Period Covered	Period That Samples Are to be Collected	Report Due Date
Winter/Spring	January 1 to June 30	March 1 to April 30	June 30 <sup>th</sup>
Summer/Fall	July 1 to December 31	September 1 to October 31	December 30 <sup>th</sup>
Annual	January 1 To December 31	-	December 30 <sup>th</sup>

Note: The annual report can be combined with the Dischargers' summer/fall semiannual report.

I, Lawrence P. Kolb, Acting Executive Officer, hereby certify that the foregoing Self-Monitoring and Reporting Program:

1. Has been developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. 00-021
2. Is effective on the date shown below.
3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.

Date Ordered: March 15, 2000

  
Lawrence P. Kolb  
Acting Executive Officer

Attachments:

- Table 1: Waste Management Unit and Areas of Concern Monitoring Wells and List of Analytical Parameters
- Table 2: Perimeter Segment and Areas of Concern Monitoring Wells and List of Analytical Parameters (To be developed in accordance with Provision 3a)
- Table 3: Current Wells Undergoing FPLH Recovery (To be prepared by Dischargers and updated annually)
- Table 4: Perimeter Segment Trigger Levels

Table 1 - Interior Wells

Well I.D.	SWMU/AOC	ANALYTICAL PARAMETERS
CHW-23	WDR (RFI Phase I)	SWMU-1 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-12A	WDR (RWQCB)	SWMU-2 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-13A	WDR (RWQCB)	SWMU-3 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-19	WDR (RFI Phase I)	SWMU-3 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-36S	WDR (RWQCB)	SWMU-4 As, Cr, Cr+6; Pb, Hg, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-22	WDR (RFI Phase I)	SWMU-5 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-34S	WDR (RWQCB)	SWMU-5 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-30S	WDR (VMP)	SWMU-6 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-31S		SWMU-6 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-2	WDR (RFI Phase I)	SWMU-8 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-29S	WDR (RWQCB)	SWMU-8 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-35A	WDR (RWQCB)	SWMU-8 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-28S	WDR (RWQCB)	SWMU-8 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-34A	WDR (RWQCB)	SWMU-9 Sb, As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-29B	WDR (RWQCB)	SWMU-10 & 14 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-16B	WDR (RWQCB)	SWMU-11 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-25S	WDR (RWQCB)	SWMU-11 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-13		SWMU-13 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-32A		SWMU-13 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-33A		SWMU-13 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-16S		SWMU-13 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-14M	WDR (RWQCB)	SWMU-14 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-19M	WDR (RWQCB)	SWMU-14 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-20S	WDR (RWQCB)	SWMU-14 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-11		SWMU-15 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-16		SWMU-15 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-24	WDR (RFI Phase I)	SWMU-15 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-25		SWMU-15 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-24A	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-25A	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-25K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-26A	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-27K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-28A	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-28K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-39A	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-41K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-42K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-24K	WDR (RWQCB)	SWMU-17 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-21B	WDR (RWQCB)	SWMU-16 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-1M	WDR (RWQCB)	SWMU-16 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-4M	WDR (RWQCB)	SWMU-16 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
WCC-5M	WDR (RWQCB)	SWMU-16 As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-19B	WDR (VMP)	SWMU-31 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-20B	WDR (VMP)	SWMU-31 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-14		SWMU-32 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-26		SWMU-32 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-36A		SWMU-32 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-37A		SWMU-32 As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-17	WDR (RFI Phase I)	Deacon's Pond As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-18	WDR (RFI Phase I)	Deacon's Pond As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-20	WDR (RFI Phase I)	Cardox As, Cr, Cr+6; Pb, Ni, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-4	WDR (RFI Phase I)	API As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-15A	WDR (VMP)	Hastings Slough Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-15B	WDR (VMP)	Hastings Slough Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-5		FPLH Pool As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-7		FPLH Pool As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-3		OWC As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-8		OWC As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
CHW-10	WDR (RFI Phase I)	OWC As, Cr, Cr+6; Pb, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-5B	WDR (VMP)	Tract 6 North Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-14A	WDR (VMP)	Tract 6 South Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-14B	WDR (VMP)	Tract 6 South Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-10A	WDR (VMP)	Tract 7 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-6A	WDR (VMP)	Tract 7 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-7A	WDR (VMP)	Tract 7 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-8A	WDR (VMP)	Tract 7 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)
MK-9A	WDR (VMP)	Tract 7 Sb, As, Cr, Cr+6; Pb, Hg, Ni, Se, Zn; btex; TPH(C4-C12); TPH(C13-C22)



Table 2 - Perimeter Groundwater Monitoring Wells

Tract	Perimeter Segment/AOC	MONITORING PARAMETERS	
		Well ID	
1	N. Alluvial	T1-C1	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
1	N. Alluvial	T1-C4	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
1	N. Alluvial	T1-C3	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
1	N. Alluvial	T1-C2	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
2	N. Alluvial/Pacheco Slope	<del>MK-18C</del>	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
3	N. Alluvial/SMMU-1	<del>MK-21C</del>	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
3	N. Alluvial/SMMU-16	<del>MK-23C</del>	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
3	N. Alluvial	T3-C1	Sb; As; Cr; Cr+6; Co; Cu; Pb; Mo; Ni; Se; Ag; Ti; Vn; Zn; blex; MEK; phenol; naphthalene
2	S. Alluvial	T2-C1	Sb; Ba; Cr; Co; Cu; Pb; Mo; Ni; Se; Vn; Zn; blex; carbon disulfide; 1,2-DCA
4	S. Alluvial	T4-C1	Sb; Ba; Cr; Co; Cu; Pb; Mo; Ni; Se; Vn; Zn; blex; carbon disulfide; 1,2-DCA
6	S. Alluvial	<del>MK-14C</del>	Sb; Ba; Cr; Co; Cu; Pb; Mo; Ni; Se; Vn; Zn; blex; carbon disulfide; 1,2-DCA
6	S. Alluvial	T6-C1	Sb; Ba; Cr; Co; Cu; Pb; Mo; Ni; Se; Vn; Zn; blex; carbon disulfide; 1,2-DCA
6	S. Alluvial	<del>MK-5C</del>	Sb; Ba; Cr; Co; Cu; Pb; Mo; Ni; Se; Vn; Zn; blex; carbon disulfide; 1,2-DCA

**Table 3 - Recovery Wells**

<b>Tract</b>	<b>Well ID.</b>
1	CHW-13
1	EEI-33R
1	EEI-79
1	EEI-80
1	EEI-82
1	ESI-1
1	WCC-100
1	WCC-101
1	WCC-102
1	WCC-108
1	WCC-117
1	WCC-118R
2	EEI-18R
2	EEI-35R
2	EEI-55
2	EEI-57
2	EEI-59
2	EEI-69R
2	MW-9R
2	MW-21R
2	MW-25
2	WCC-110
2	WCC-122
3	EEI-40R
3	EEI-42
3	EEI-44R
3	EEI-46R
3	EEI-48
3	TS-3
3	TS-4
3	TS-5
3	TS-6
3	TS-8
3	TS-9



**Table 4**

**TRIGGER LEVELS**

**(This table is to be developed in accordance with Task B.2)**